1. Estimate the area under the graph of \( f(x) = x^2 - 2x \), from \( x = 0 \) to \( x = 8 \) using four rectangles and midpoints.

2. Find the following

(a) \( \frac{d}{dx} \int_{\sqrt{2}}^{x^2} \sin(t^2)dt \)

(b) \( \sum_{i=1}^{n} \left( 3 + \frac{2i}{n} \right) \)
3. Find the value of the integral \( \int_{-5}^{0} (2x - 4\sqrt{25 - x^2}) \, dx \) by interpreting the integral in terms of areas.

4. Find \( \lim_{n \to \infty} \frac{1}{n} \left\{ \sqrt[3]{\frac{1}{n}} + \sqrt[3]{\frac{2}{n}} + \sqrt[3]{\frac{3}{n}} + \cdots + \sqrt[3]{\frac{n}{n}} \right\} \)

**Hint:** First express the limit as a definite integral